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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/699,860	11/04/2003	Yuichiro Hayase	10517/196	5124

23838 7590 06/23/2004

KENYON & KENYON
1500 K STREET, N.W., SUITE 700
WASHINGTON, DC 20005

EXAMINER	
RIDDLE, KYLE M	

ART UNIT	PAPER NUMBER
3748	

DATE MAILED: 06/23/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/699,860	HAYASE ET AL.	
	Examiner	Art Unit	
	Kyle M. Riddle	3748	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-20* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1,2,5,8,13-15,17 and 19* is/are rejected.

7)☒ Claim(s) *3,4,6,7,9-12,16,18 and 20* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *04 November 2003* is/are: a)☐ accepted or b)☒ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☒ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *11042003*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Drawings

1. The drawings filed on 4 November 2003 are acceptable subject to correction of the informalities indicated on the attached "Notice of Draftsperson's Patent Drawing Review," PTO-948. In order to avoid abandonment of this application, correction is required in reply to the Office action. The correction will not be held in abeyance.

Specification

2. The disclosure is objected to because of the following informalities:

- Page 2, line 24, "units" should read --units.--;

- Page 10, lines 6, 9, 19, and 26, "electromagnetically" should read --electromagnetic--.

Appropriate correction is required.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

4. Claim 13 is rejected under 35 U.S.C. 103(a) as being unpatentable over Morikawa et al. (U.S. Patent 6,636,782) in view of Delesalle (U.S. Patent 4,641,613).

Morikawa et al. disclose a method of driving and controlling solenoid-operated valves comprising:

- a single programmable logic controller (PLC) 12 controlling valve operation signals to a gateway 15 having a CPU 16 (column 6, lines 2-6);

- communication control integrated circuits 22, 24, 26, 28 controlling the opening/closing of solenoid-operated valves in particular groups (column 6, lines 32-37, lines 57-67 with column 7, lines 1-13, column 28, lines 56-67 with column 29, lines 1-6).

Morikawa et al. fail to disclose minimizing valve overlap.

Delesalle teaches processing units 24, 28 controlling groups of intake and exhaust valves, respectively, using electrohydraulic or electropneumatic actuators controlled by electromagnets 34 and 36 (column 5, lines 36-46) such that opening and closing periods of the valves are reduced or minimized if desired (column 4, lines 26-51, lines 62-68 with column 5, lines 1-8, and Figures 2 and 3). It would have been obvious to one having ordinary skill in the art at the time of the invention was made, to have utilized the teaching by Delesalle in the driving method of Morikawa et al., since the use thereof would more specifically define the adjustment of the valve overlap capability of the communication control integrated circuits and the benefits obtained therefrom during various operating conditions.

5. Claims 1, 2, 5, 8, 14, 15, 17, and 19 are rejected under 35 U.S.C. 103(a) as being obvious over Morikawa et al. in view of Delesalle.

Morikawa et al. disclose a method of driving and controlling solenoid-operated valves comprising:

- a single programmable logic controller (PLC) 12 controlling valve operation signals to a gateway 15 having a CPU 16 (column 6, lines 2-6);

- communication control integrated circuits 22, 24, 26, 28 controlling the opening/closing of solenoid-operated valves in particular groups (column 6, lines 32-37, lines 57-67 with column 7, lines 1-13, column 28, lines 56-67 with column 29, lines 1-6).

Delesalle teaches processing units 24, 28 controlling groups of intake and exhaust valves, respectively, using electrohydraulic or electropneumatic actuators controlled by electromagnets 34 and 36 (column 5, lines 36-46) such that opening and closing periods of the valves are reduced or minimized if desired (column 4, lines 26-51, lines 62-68 with column 5, lines 1-8, and Figures 2 and 3), specifically for operation during starting, no-load running and low-load running using all or partial valve lifts in all or some of the cylinders (column 4, lines 23-25, column 5, lines 3-8, column 6, lines 2-12).

Re claims 1, 2, 14, and 15, Morikawa et al. fail to teach valve groups of different cylinders with opening periods that do not overlap in the low speed low load region.

Both Morikawa et al. and Delesalle teach infinite control of the valve openings for each group of valves of various cylinders as described above and with Delesalle specifically referencing control during low-load running, each having the ability to control the openings periods of the valves so they do not overlap in the specified region. The inclusion of the limitation of no valve overlap in the low speed low load regions would have been obvious to one having ordinary skill in the art depending on desired engine operating conditions or characteristics.

Re claims 5, 8, 17, and 19, Morikawa et al. fail to teach operating individual intake or exhaust valves of the same cylinder in the various valve groups.

Delesalle teaches using all or partial valve lifts in all or some of the cylinders (column 5, lines 3-8) while Morikawa et al. suggests infinite control of each of the valves in all groups (column 28, lines 56-67 with column 29, lines 1-6). The control of individual valves of the same cylinder belonging to valve groups is well within the capability of Morikawa et al., as modified

by Delesalle, and would have been obvious to one having ordinary skill in the art depending on engine operating conditions, cylinder characteristics, air/fuel ratios, engine load, etc.

Allowable Subject Matter

6. Claims 3, 4, 6, 7, 9-12, 16, 18, and 20 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Conclusion

7. The IDS (PTO-1449) filed on 4 November 2003 has been considered. An initialized copy is attached hereto.

8. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure and consists of 2 patents.

- Eichenseher et al. (U.S. Patent 6,505,113) disclose a circuit for controlling intake and exhaust valves with a communications controller and separate valve placement controllers.

- Yanai et al. (U.S. Patent 6,626,146) disclose an electromagnetic valve drive apparatus with an electronic control unit having multiple switching elements to control groups of intake and exhaust valves.

Communication

9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kyle M. Riddle whose telephone number is (703) 306-3409. The examiner can normally be reached on M-F (07:30-5:00) Second Friday Off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Thomas Denion can be reached on (703) 308-2623. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Kyle M. Riddle
Examiner
Art Unit 3748

kmr

THOMAS DENION
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 3700